

CLAIMS

What is claimed is:

1. A common electrode substrate comprising:

a transparent insulating substrate to be arranged opposite to an array substrate having pixel electrodes formed in respective pixel regions that are defined by a plurality of gate bus lines and drain bus lines, and to hold a liquid crystal having negative dielectric anisotropy;

a common electrode formed on the transparent insulating substrate;

alignment regulating structures having linear protrusions formed on the common electrode; and

a light shield film formed on the transparent insulating substrate and having overlap regions that overlap the pixel electrodes when viewed in a direction perpendicular to a surface of the transparent insulating substrate so as to shield, from light, alignment defective regions of the liquid crystal formed in regions of end portions of the pixel electrodes.

2. The common electrode substrate according to claim 1, wherein the light shield film has the overlap regions extending along the drain bus lines, when viewed in the direction perpendicular to the surface of the transparent insulating substrate.

3. The common electrode substrate according to claim 2, wherein a width of the overlap regions is greater than or equal

to 2 μm and smaller than or equal to 12 μm when viewed in the direction perpendicular to the surface of the transparent insulating substrate.

4. The common electrode substrate according to claim 1, wherein:

the alignment regulating structures further have auxiliary protrusions that branch off the linear protrusions and extend along portions of the drain bus lines that are opposed to end portions of the pixel electrodes; and

the light shield film has the overlap regions in regions where the auxiliary protrusions are not formed, when viewed in the direction perpendicular to the surface of the transparent insulating substrate.

5. The common electrode substrate according to claim 1, wherein the light shield film is formed outside each of the pixel electrodes in normal alignment regions other than the alignment defective regions of the liquid crystal, when viewed in the direction perpendicular to the surface of the transparent insulating substrate.

6. The common electrode substrate according to claim 5, wherein the light shield film is formed outside each of the pixel electrodes so as to extend along the drain bus lines, when viewed in the direction perpendicular to the surface of the transparent insulating substrate.

7. The common electrode substrate according to claim 6,

wherein a distance between end portions of the light shield film and end portions of each of the pixel electrodes in the normal alignment regions of the liquid crystal is smaller than or equal to 7 μm , when viewed parallel with the surface of the transparent insulating substrate.

8. The common electrode substrate according to claim 5, wherein:

the alignment regulating structures further have auxiliary protrusions that branch off the protrusions and extend along portions of the drain bus lines that are opposed to end portions of the pixel electrodes; and

the light shield film is formed outside each of the pixel electrodes in regions where the auxiliary protrusions are formed when viewed in the direction perpendicular to the surface of the transparent insulating substrate.

9. A common electrode substrate comprising:

a transparent insulating substrate to be arranged opposite to an array substrate having pixel electrodes formed in respective pixel regions that are defined by a plurality of gate bus lines and drain bus lines, and to hold a liquid crystal having negative dielectric anisotropy;

a common electrode formed on the transparent insulating substrate;

alignment regulating structures having linear protrusions formed on the common electrode; and

a light shield film formed on the transparent insulating substrate outside each of the pixel electrodes in normal alignment

regions other than alignment defective regions of the liquid crystal when viewed in a direction perpendicular to a surface of the transparent insulating substrate.

10. The common electrode substrate according to claim 9, wherein the light shield film is formed outside each of the pixel electrodes so as to extend along the drain bus lines when viewed in the direction perpendicular to the surface of the transparent insulating substrate.

11. The common electrode substrate according to claim 9, wherein:

the alignment regulating structures further have auxiliary protrusions that branch off the linear protrusions and extend along portions of the drain bus lines that are opposed to end portions of the pixel electrodes; and

the light shield film is formed outside each of the pixel electrodes in regions where the auxiliary protrusions are formed when viewed in the direction perpendicular to the surface of the transparent insulating substrate.

12. The common electrode substrate according to claim 1, wherein the light shield film is formed by laminating, one on another, forming materials of color filters that are formed in the respective pixel regions.

13. A common electrode substrate comprising:

a transparent insulating substrate to be arranged opposite to an array substrate having pixel electrodes formed in respective

pixel regions that are defined by a plurality of gate bus lines and drain bus lines, and to hold a liquid crystal having negative dielectric anisotropy;

a common electrode formed on the transparent insulating substrate and having steps for alignment-restricting the liquid crystal in regions opposed to regions between each of the pixel electrodes and the drain bus lines; and

alignment regulating structures having linear protrusions formed on the common electrode.

14. The common electrode substrate according to claim 13, wherein the steps are formed thicker than the regions that are opposed to the respective pixel electrodes.

15. The common electrode substrate according to claim 13, wherein:

the alignment regulating structures further have auxiliary protrusions that branch off the linear protrusions and extend along portions of the drain bus lines that are opposed to end portions of the pixel electrodes; and

the steps are formed in regions where the auxiliary protrusions are not formed.

16. The common electrode substrate according to claim 13, wherein each of the steps is formed in such a manner that a resin is formed under the common electrode.

17. The common electrode substrate according to claim 16, wherein each of the steps is formed in such a manner that forming

materials of color filters formed in the respective pixel regions are laminated one on another.

18. The common electrode substrate according to claim 16, wherein each of the steps is made of a black resin.

19. The common electrode substrate according to claim 1, wherein the linear protrusions are formed obliquely with respect to edges of the pixel electrodes.

20. A liquid crystal display device comprising an array substrate having pixel electrodes formed in respective pixel regions that are defined by a plurality of gate bus lines and drain bus lines, an opposite substrate arranged opposite to the array substrate, and a liquid crystal having negative dielectric anisotropy sealed between the array substrate and the opposite substrate;

wherein the opposite substrate is the common electrode substrate as set forth in claim 1.